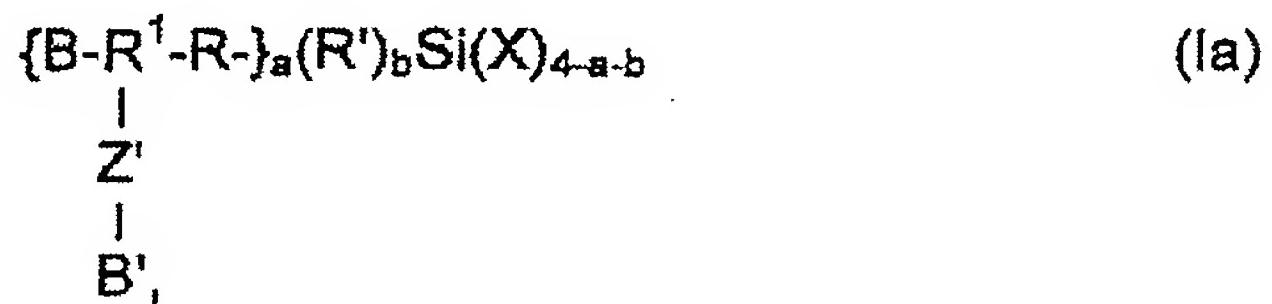


Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) Silane of the structure (Ia) below



where the radicals and indices have the following meanings:

R is an open-chain and/or cyclic alkylene, arylene, or alkylene-arylene group, with 1 to 10 carbon atoms in each case, which can be interrupted by one or more oxygen or sulfur atoms or carboxyl or amino groups or can carry such atoms/groups at their end opposite the silicon atom,

R<sup>1</sup> is a Z'-substituted, open-chain and/or cyclic alkylene, arylene, or alkylene-arylene group, with 1 to 10 carbon atoms in each case, which can be interrupted by one or more oxygen or sulfur atoms or carboxyl or amino groups or can carry such atoms/groups at their end opposite the silicon atom,

R' is an open-chain and/or cyclic alkyl, alkenyl, aryl, or alkylaryl, or arylalkyl group, with preferably 1 to 20 carbon atoms,

B and B' can be the same or different, both radicals can have the meaning of a straight-chain or branched organically polymerizable group with at least one C=C double bond and at least 2 carbon atoms, instead of this B' can also mean -R<sup>2</sup><sub>a</sub>SiX<sub>4-a</sub>, -R<sup>2</sup>SiX<sub>3</sub>, or -R<sup>2</sup><sub>a</sub>R<sup>1</sup><sub>b</sub>SiX<sub>4-a-b</sub>, -R<sup>2</sup>R<sup>1</sup><sub>b</sub>SiX<sub>3-b</sub>, where R<sup>2</sup> is an alkylene group with 1 to 10 carbon atoms and R' is defined as above,

X is a group which can enter into a hydrolytic condensation reaction with the formation of Si-O-Si bridges,

Z' has the meaning -NH-C(O)O-, -NH-C(O)-, or -CO(O)-, where the two radicals named first are bonded via the NH group to the group B' while the carboxylate group can point in both directions, where, when Z' is a -CO(O)- group, its the carbon atom of which is bonded to the radical B', the grouping B' Z' may not have

~~the meaning of an acrylate group if B comprises an acrylate group, and the grouping B' Z' may not be a methacrylate group if B comprises a methacrylate group, and B' has the meaning of a straight chained or branched organically polymerizable group having at least one C=C double bond and at least 2 carbon atoms, this C=C double bond must be part of a (meth)-acrylate residue as component of B',~~

a means 1 or 2, and

b is 0 or 1.

2. (Original) Silane according to claim 1, in which

R<sup>1</sup> is a group with 1 to 10, preferably 1 to 4, carbon atoms and/or

B and optionally also B' carries at least one Michael system, particularly preferably an acrylate or methacrylate group, and/or

X is a C<sub>1</sub>-C<sub>10</sub> alkoxy group.

3. (Previously Presented) Silane according to claim 1, in which

the radicals B and optionally also B' are acrylic acid ester groups and/or methacrylic acid ester groups of trimethylolpropane, of glycerin, of pentaerythritol, of C<sub>2</sub>-C<sub>4</sub>-alkane diols, of polyethylene glycols, of polypropylene glycols, or in given cases substituted and/or alkoxyated, bisphenol A or comprise these esters.

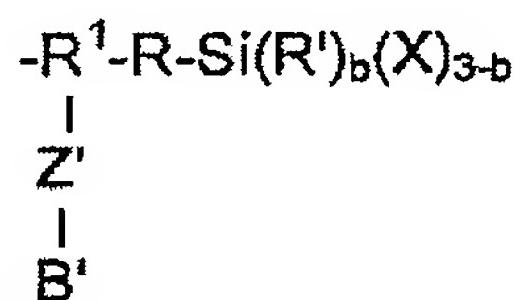
4. (Previously Presented) Silane according to claim 1, in which

the radicals B and optionally also B' comprise an end-to-end carbon skeleton or this skeleton is interrupted by heteroatoms or groups chosen from among O, S, SO, NH, NHCO, PR, POR, CONHCO, COO, NHCOO.

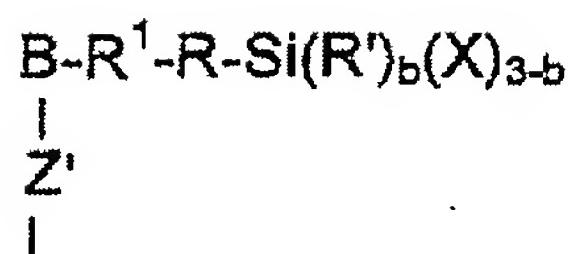
5. (Previously Presented) Silane according to claim 1, in which a is equal to 1 and b is equal to 0.

6. (Previously Presented) Silane according to claim 1, in which a is equal to 1 and b is equal to 1.

7. (Previously Presented) Silane according to claim 1, in which B is a (meth)acrylate group or comprises a radical which is bonded via a (meth)acrylate group to R<sup>1</sup> and comprises no additional or one, two, or three (meth)acrylate groups.
8. (Previously Presented) Silane according to claim 1, in which B is bonded via a group Z to R<sup>1</sup>, where Z is an -O-C(O)-, -S-C(O), or -NH-C(O)- group if Z' is -NH-CO- and Z is -O-R<sup>4</sup>, -S-R<sup>4</sup>, -NH-R<sup>4</sup>, -C(O)O-R<sup>4</sup>, -O-, -S-, -NH-, or -C(O)O- if Z' is -NH-C(O)O-, where R<sup>4</sup> has the meaning alkylene, arylene, or alkylarylene with 1 to 10 (for ringless groups) or 6 to 14 (for ring-containing groups) carbon atoms.
9. (Previously Presented) Silane according to claim 7, in which Z' has the meaning -NH-C(O)O- or -NH-C(O).
10. (Previously Presented) Silane according to claim 7, in which b means zero.
11. (Previously Presented) Silane according to claim 7, in which b is 1 and R' is a C<sub>1</sub>-C<sub>4</sub> alkyl group.
12. (Previously Presented) Silane according to claim 1, in which B' is a (meth)acrylate group or comprises a radical which is bonded via a (meth)acrylate group to R<sup>1</sup> and comprises no additional or one, two, or three (meth)acrylate groups.
13. (Previously Presented) Silane according to claim 1, in which B' is a dialkoxyalkylsilylalkylene group with 1 to 4 carbon atoms in the alkyl and alkoxy groups and 1 to 8 carbon atoms in the alkylene group.
14. (Previously Presented) Silane according to claim 1, in which B comprises at least one additional group

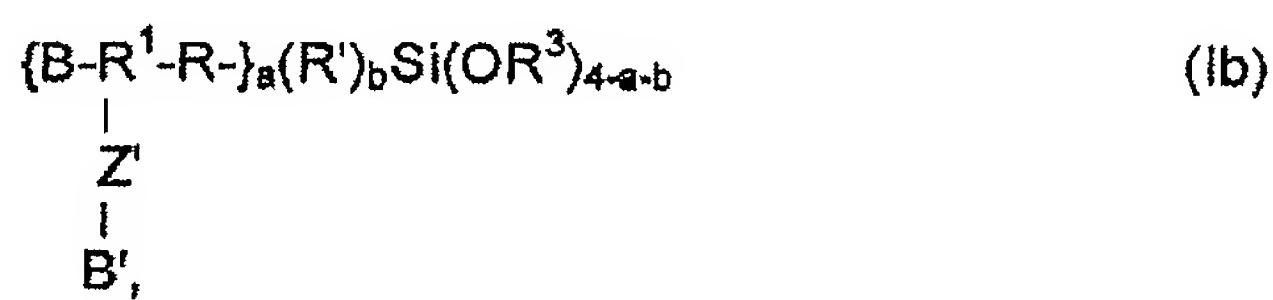


or B' comprises at least one additional group



where the radicals and indices have the meanings specified in claim 1 for the structure (1a).

15. (Currently Amended) Silicic acid polycondensate or partial polycondensate with the following structure (lb)



where the radicals and indices have the following meanings:

R is an open-chain and/or cyclic alkylene, arylene, or alkylene-arylene group, with 1 to 10 carbon atoms in each case, which can be interrupted by one or more oxygen or sulfur atoms or carboxyl or amino groups or can carry such atoms/groups at their end opposite the silicon atom,

R<sup>1</sup> is a Z'-substituted, open-chain and/or cyclic alkylene, arylene, or alkylene-arylene group, with 1 to 10 carbon atoms in each case, which can be interrupted by one or more oxygen or sulfur atoms or carboxyl or amino groups or can carry such atoms/groups at their end opposite the silicon atom,

R' is an open-chain and/or cyclic alkyl, alkenyl, aryl, or alkylaryl, or arylalkyl group, with preferably 1 to 20 carbon atoms,

the radicals R<sup>3</sup> are the same or different, both radicals have at least in part the meaning of a bond to another silicon atom and otherwise represent a hydrogen atom, an alkyl group with 1 to 10 carbon atoms, or a bond to another metal atom which can be inserted into silicic acid heteropolycondensates,

B and B' can be the same or different, both radicals can have the meaning of a straight-chain or branched organically polymerizable group with at least one C=C double bond and at least 2 carbon atoms, instead of

this B' can also mean  $-R^2_aSiX_{4-a}$   $-R^2SiX_3$  or  $-R^2_aR^+_bSiX_{4-a-b}$ ;  $-R^2R^+_bSiX_{4-b}$  where R<sup>2</sup> is an alkylene group with 1 to 10 carbon atoms and R' is defined as above,

Z' has the meaning -NH-C(O)O-, -NH-C(O)-, or -CO(O)-, where the first two radicals named are bonded via the NH group to the group B' while the carboxylate group can point in both directions, where, when Z' is a -CO(O)- group, its the carbon atom of which is bonded to the radical B', ~~the grouping B' Z'~~ may not have the meaning of an acrylate group if B comprises an acrylate group, and the grouping B' Z' may not be a methacrylate group if B comprises a methacrylate group, and B' has the meaning of a straight chained or branched organically polymerizable group having at least one C=C double bond and at least 2 carbon atoms, this C=C double bond must be part of a (meth-) acrylate residue as component of B', a means 1 or 2, and b can be 0 or 1.

16. (Original) Silicic acid polycondensate or partial polycondensate according to claim 15, in which

R<sup>1</sup> is a group with 1 to 10, preferably 1 to 4, carbon atoms and/or B and optionally also B' carries at least one Michael system, particularly preferably an acrylate or methacrylate group, and/or X is a C<sub>1</sub>-C<sub>10</sub> alkoxy group.

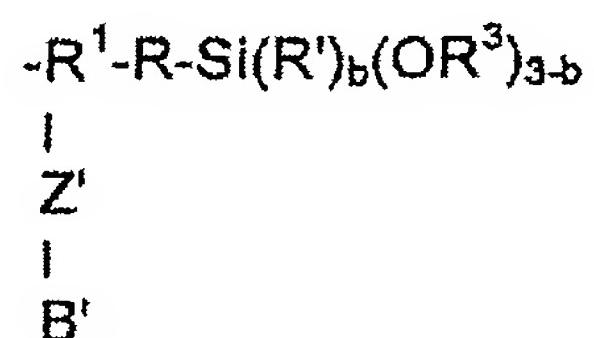
17. (Previously Presented) Silicic acid polycondensate or partial polycondensate according to claim 15, in which

the radicals B and optionally also B' are partially or completely (meth)acrylic radicals and/or acrylic acid ester groups and/or methacrylic acid ester groups of trimethylolpropane, of glycerol, of pentaerythritol, of C<sub>2</sub>-C<sub>4</sub>-alkane diols, of polyethylene glycols, of polypropylene glycols, or of, in given cases substituted and/or alkoxyated, bisphenol A or comprise these esters.

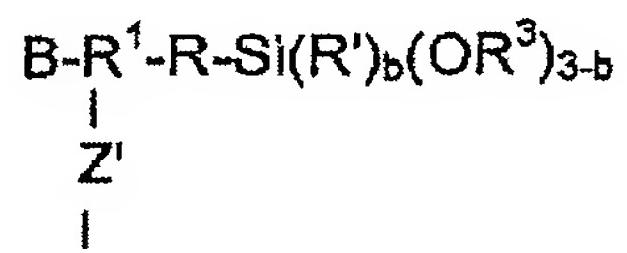
18. (Previously Presented) Silicic acid polycondensate or partial polycondensate according to claim 15, in which

the radicals B and optionally also B' comprise an end-to-end carbon skeleton or this skeleton is interrupted by heteroatoms or groups chosen from among O, S, SO, NH, NHCO, PR, POR, CONHCO, COO, NHCOO.

19. (Previously Presented) Silicic acid polycondensate or partial polycondensate according to claim 15, in which a is equal to 1 and b is equal to 0.
20. (Previously Presented) Silicic acid polycondensate or partial polycondensate according to claim 15, in which a is equal to 1 and b is equal to 1.
21. (Previously Presented) Silicic acid polycondensate or partial polycondensate according to claim 15, in which B comprises at least one additional group



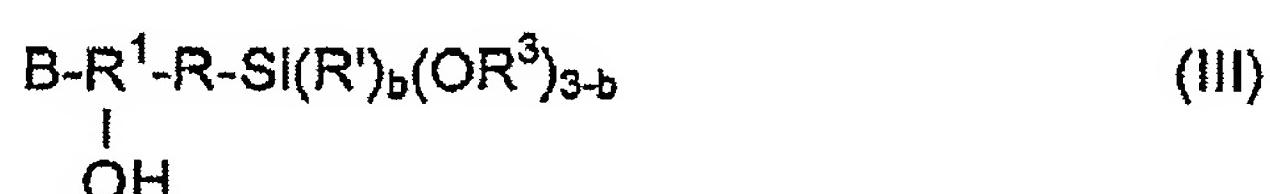
or B' comprises at least one additional group



where the radicals and indices have the meanings specified in claim 15.

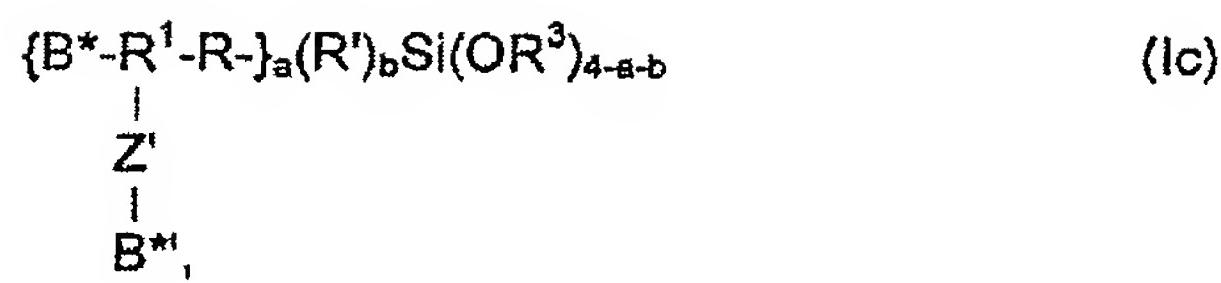
22. (Previously Presented) Silicic acid polycondensate or partial polycondensate according to claim 15, consisting of or comprising a mixture of structural elements of the structure (Ib) with different meanings for the radicals and indices.
23. (Previously Presented) Silicic acid polycondensate or partial polycondensate, obtained through hydrolysis and condensation of at least one silane according to claim 1.

24. (Previously Presented) Silicic acid polycondensate or partial polycondensate according to claim 23, obtained through hydrolysis and condensation of a mixture of said silane as well as at least one additional silane and/or at least one hydrolyzable metal compounds chosen from among hydrolyzable metal compounds of boron, aluminum, germanium, tin, titanium, and zirconium.
25. (Previously Presented) Silicic acid polycondensate or partial polycondensate according to claim 15, furthermore comprising a structural element (III)



in which the radicals and indices have the meaning specified above for the structure (Ib) in claim 15.

26. (Original) Silicic acid polycondensate or partial polycondensate according to claim 25 in which the portion of structural elements of the formula (III), relative to the portions of structural elements of the formula (Ib), lies in the range of 5 to 70%, preferably in the range of 10 to 50%.
27. (Previously Presented) Silicic acid polycondensate or partial polycondensate according to claim 15, which is free from polymerizable organic monomers.
28. (Previously Presented) Organic polymerizable material (composite), comprising a silicic acid polycondensate or partial polycondensate according to claim 15, as well as a filling material.
29. (Original) Organic polymerizable material (composite) according to claim 28, in which the filling material consists of glass or ceramics.
30. Cancelled
31. (Currently Amended) Organically polymerized silicic acid polycondensate or partial polycondensate of the following structure (Ic)



where the radicals and indices have the following meanings:

R is an open-chain and/or cyclic alkylene, arylene, or alkylene-arylene group, with 1 to 10 carbon atoms in each case, which can be interrupted by one or more oxygen or sulfur atoms or carboxyl ~~or amino~~ groups or can carry such atoms/groups at their end opposite the silicon atom,

R<sup>1</sup> is a Z'-substituted, open-chain and/or cyclic alkylene, arylene, or alkylene-arylene group, with 1 to 10 carbon atoms in each case, which can be interrupted by one or more oxygen or sulfur atoms or carboxyl or amino groups or can carry such atoms/groups at their end opposite the silicon atom,

R' is an open-chain and/or cyclic alkyl, alkenyl, aryl, or alkylaryl, or arylalkyl group, with preferably 1 to 20 carbon atoms,

the radicals R<sup>3</sup> are the same or different, both radicals have at least in part the meaning of a bond to another silicon atom and otherwise represent a hydrogen atom, an alkyl group with 1 to 10 carbon atoms, or a bond to another metal atom which can be inserted into silicic acid heteropolycondensates,

B\* and B\*\* can be the same or different, both radicals can have the meaning of a straight-chain or branched organically polymerizable group with at least one C=C double bond and at least 2 carbon atoms, instead of this B\*\* can also mean ~~-R<sup>2</sup><sub>a</sub>Si(OR<sup>3</sup>)<sub>4-a</sub>~~ -R<sup>2</sup>Si(OR<sup>3</sup>)<sub>3</sub> or ~~-R<sup>2</sup><sub>a</sub>R<sup>1</sup><sub>b</sub>Si(OR<sup>3</sup>)<sub>4-a-b</sub>~~ -R<sup>2</sup>R<sup>1</sup><sub>b</sub>Si(OR<sup>3</sup>)<sub>3-b</sub> where R<sup>2</sup> is an alkylene group with 1 to 10 carbon atoms and R' and R<sup>3</sup> are defined as above,

Z' has the meaning -NH-C(O)O-, -NH-C(O)-, or -CO(O)-, where the two radicals named first are bonded via the NH group to the group B' while the carboxylate group can point in both directions, where, when Z' is a -CO(O)- group, ~~its the carbon atom of which~~ is bonded to the radical B', ~~the grouping B' Z'~~ may not have the meaning of an acrylate group if B comprises an acrylate group, and the grouping B' Z' ~~may not be a methacrylate group if B comprises a methacrylate group and B' has the meaning of a straight chained or~~

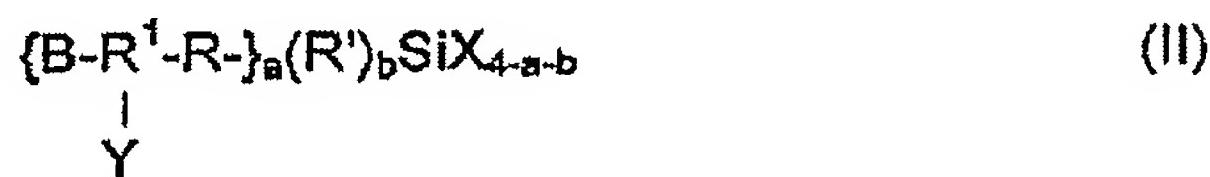
branched organically polymerizable group having at least one C=C double bond and at least 2 carbon atoms, this C=C double bond must be part of a (meth-)acrylate residue as component of B',

a means 1 or 2, and

b can be 0 or 1.

32. (Previously Presented) Organically polymerized silicic acid polycondensate or partial polycondensate, obtained by organic polymerization of a silicic acid polycondensate or partial polycondensate according to claim 15.
33. (Previously Presented) Organically polymerized silicic acid polycondensate or partial polycondensate according to claim 31, additionally containing at least one filling material.
34. (Previously Presented) Copolymerize, obtained through copolymerization of a silicic acid polycondensate or partial polycondensate according to claim 15, and one or more organically polymerizable monomers and/or prepolymers, chosen from among radically and/or ionically and/or covalent-nucleophilically polymerizable monomers and/or prepolymers or one or more silane-bonded cyclic systems.
35. (Original) Copolymerize according to claim 34, in which the radically polymerizable compounds are chosen from among acrylates or methacrylates, the ionically polymerizable compounds are chosen from among ring systems which are polymerizable by cationic opening of the ring, in particular spiroorthoesters, spiroorthocarbonates, bicyclic spiroorthoesters, monoepoxides or oligoepoxides or spirosilanes, and the radically polymerizable as well as ionically polymerizable compounds are chosen from among the group of methacryloyl-spiroorthoesters.
36. (Original) Copolymerize according to claim 34, in which the silane-bonded cyclic system is chosen from among those which comprise epoxides.
37. (Previously Presented) Process for the production of a silane with the structure (Ia) as defined in claim 1, comprising the following steps
  - (a) preparation of a compound with the structure (II) or an isomer

a re-esterification product, or one of this compound's condensation products arising by loss of an alcohol molecule



in which B, R<sup>1</sup>, R, R', X, a, and b have the meanings specified in claim 1 for the structure (Ia) and Y is OH or COOH,

and Y means COOH,

- (b) reaction of this compound or of the isomer, re-esterification product, or condensation product with a compound

B'NCO,

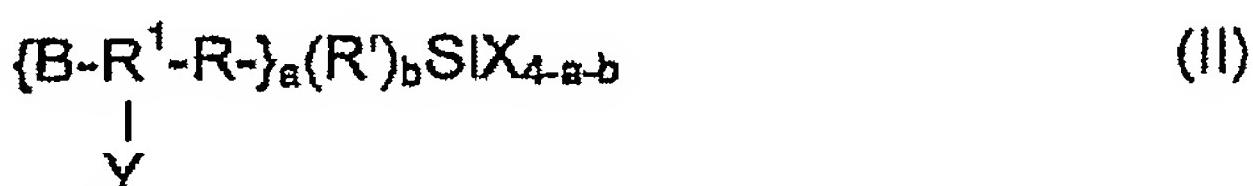
in which B' has the meaning specified in claim 1 for structure (Ia),

and

- (c) in given cases, workup of the product.

38. (Previously Presented) Process for the production of a silane with the formula (Ia) as defined in claim 1, including the following steps:

- (a) preparation of a compound with the structure (II) or an isomer a re-esterification product, or one of this compound's condensation products arising by loss of an alcohol molecule



in which B, R<sup>1</sup>, R, R', X, a, and b have the meanings specified in claim 1 for the structure (Ia), and Y means COOH.

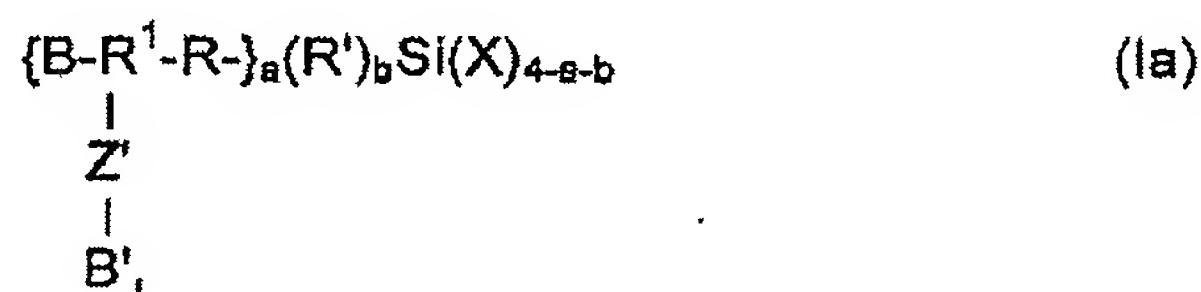
- (b) reaction of this compound or of the isomer, re-esterification product, or condensation product with a compound

B'OH,

in which B' has the meaning specified in claim 1 for structure (la),  
and

(c) in given cases, workup of the product.

39. (Currently Amended) Process for the production of a silane with the formula (la)



where the radicals and indices have the following meanings:

R is an open-chain and/or cyclic alkylene, arylene, or alkylene-arylene group, with 1 to 10 carbon atoms in each case, which can be interrupted by one or more oxygen or sulfur atoms or carboxyl or amino groups or can carry such atoms/groups at their end opposite the silicon atom,

R<sup>1</sup> is a Z'-substituted, open-chain and/or cyclic alkylene, arylene, or alkylene-arylene group, with 1 to 10 carbon atoms in each case, which can be interrupted by one or more oxygen or sulfur atoms or carboxyl or amino groups or can carry such atoms/groups at their end opposite the silicon atom,

R' is an open-chain and/or cyclic alkyl, alkenyl, aryl, or alkylaryl, or arylalkyl group, with preferably 1 to 20 carbon atoms,

B and B' can be the same or different, both radicals can have the meaning of a straight-chain or branched organically polymerizable group with at least one C=C double bond and at least 2 carbon atoms, instead of this B' can also mean  $-R^2_aSiX_{4-a}$   $\underline{-R^2SiX_3}$  or  $\underline{-R^2_aR^1_bSiX_{4-a-b}}$ ,  $\underline{-R^2R^1_bSiX_{4-b}}$ , where is an alkylene group with 1 to 10 carbon atoms and R' is defined as above.

X is a group which can enter into a hydrolytic condensation reaction with the formation of Si-O-Si bridges.

Z' has the meaning -CO(0)-, where the carboxylate group can point in both directions carbon atom is bound to the residue B',

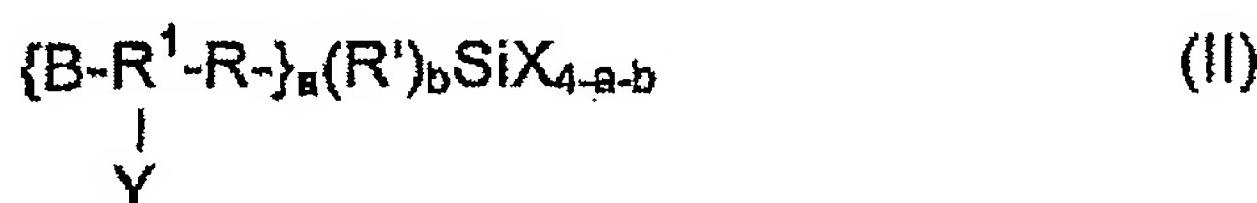
a means 1 or 2,

and b is 0 or 1

comprising the following steps:

(a) preparation of a compound with the structure (II) or an isomer

a re-esterification product, or one of this compound's condensation products arising by loss of an alcohol molecule



in which B, R<sup>1</sup>, R, R', X, a, and b have the meanings specified in claim 1 for the structure (Ia) and Y is OH,

(b) reaction of this compound or of the isomer, re-esterification product,

or condensation product with a compound

B'C(O)X',

in which B' has the meaning specified in claim 1 for structure (Ia)

and C(O)X' is a carboxylic acid group or an activated carbonyl compound, in particular an acid chloride or an acid anhydride,

and

(c) in given cases, workup of the product.

40. (Previously Presented) Silane according to claim 1, in which Z' has the meaning

-NH-C(O)O- or -NH-C(O).

41. (Previously Presented) Silane according to claim 9, in which b means zero.

42. (Previously Presented) Silane according to claim 9, in which b is 1 and R' is a C<sub>1</sub>-C<sub>4</sub> alkyl group.

43. (Previously Presented) Silane according to claim 40, in which b is 1 and R' is a C<sub>1</sub>-C<sub>4</sub> alkyl group.